

New and Traditional Sources of Care Evaluated by Recently Pregnant Women

MEHARRY MEDICAL COLLEGE in Nashville, Tenn., began to reorganize its outpatient services in 1966, gradually closing out its traditional outpatient clinics and replacing them in 1969 with a community-based health center and a hospital-based health center. The community center provides a broad range of in-center services and outreach services. The hospital-based center also provides a broad range of in-center services but, because of financial limitations, only limited outreach services. The traditional sources of care—primarily private practitioners, other hospital outpatient clinics, and emergency rooms—are also available to the community.

In July 1969, the college created a Center for Health Care Research (1). Researchers there are measuring the effects of the two new health centers—not just on specific users of specific services but also on the community served. One study underway is on unmet needs; it is now in its second phase and will be completed in 1977 (2).

Our focus in this paper is the model developed for studying assessments of alternative kinds of health services. In particular, we report the findings of a study

designed to determine what a universe of recently pregnant women thought about the obstetric and pediatric care they obtained from the new or the traditional sources of care. We also obtained their views on other health-related matters.

The Study Design

The birth certificates for all babies born in 1973 to women in three geographic areas in Nashville were obtained from Carol Walters, of our research center, who is conducting a long-term study on perinatal mortality. Certificates showing stillbirths were excluded.

The three study areas had a total population of about 85,000. Area 1, with 35,000 residents, was the predefined geographic area served by the community health center with broad outreach. Area 2, also with 35,000 residents and with socioeconomic characteristics similar to area 1, was served by the hospital-based center with limited outreach. Finally, a comparison area of 15,000 residents, area 3, was constructed through the use of 1970 census data on block groups. The criterion for selection of the block groups was similar to that for the two other areas in terms of relevant socioeconomic variables (race, sex, age, median house value, median rent, and mean number of persons per household). Census data showed satisfactory comparability among the three areas along the parameters selected, and the count of family household units—by actual street mapping procedures—showed close agreement with census counts in every block group that remained “stable” since the 1970 census.

The traditional sources of care were available to all 85,000 residents. However, the community center was available only to the residents of area 1 and the hospital center was available only to the residents of area 2. Neither of these two new health centers was available to the area 3 residents.

In addition to the new Meharry health centers, the traditional kinds of ambulatory care evaluated in this study were (a) care provided by private physicians to their Medicaid patients and their paying patients and

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(*b*) care provided by outpatient clinics of the public hospital and the voluntary hospitals.

A precoded and structured questionnaire was administered in a standardized way to women in the three study areas who had had babies in 1973. The data gathered included social and demographic background information, source of care used, and details about the content of prenatal care, hospital confinement, postnatal care, and the care received by the infant in the first 6 months of life. The interviewers also obtained information on these mothers' knowledge of reproduction and birth control methods and their expressed facilitators and barriers to obtaining health care—including transportation, appointments, interpersonal aspects of care, and outreach services. Additionally, data were obtained on insurance coverage, costs of care, family income, and opinions about currently topical health care issues.

After the preceding information—which presumably facilitated re-living of the events of the pregnancy—was gathered, each respondent was asked to rate her health care provider and the services she had received. We believed that this procedure would enhance the validity of the ratings.

Of 1,322 birth certificates and 1,067 potential respondents, 817 women or 76 percent were actually interviewed. The difference between the number of interviewees and the number of birth certificates resulted from the following factors: 14 sets of twins (2 birth certificates but the same mother); 4 babies had died (mothers were not interviewed); 1 mother had died; 5 babies had been given up for adoption (mothers not interviewed); 42 mothers had moved from the city or State, or both; 179 mothers could not be located (addresses incorrect on birth certificates); 44 mothers refused to be interviewed; and 206 mothers or relatives had been contacted, but the interviews were not completed or appointments were not kept. The interviews took place in the women's homes on an average of 6 months post partum. Although it might have resulted in some memory loss, this time delay was

necessary to allow sufficient time for obtaining the birth records, for the completion of the postnatal checkups, and for the initiation of immunizations for the babies. Thus, the study fieldwork lasted from August 1973 through September 1974. Upon completion of the interview, each respondent was given \$5 for her participation.

A key hypothesis to be tested was as follows: Private medical practice would be rated as highly satisfactory by patients who paid for their care, but the women who used the community health center with broad outreach services would also rate their care as highly satisfactory. On the other hand, services provided by private physicians to Medicaid patients, by the hospital-based health center with limited outreach, and by the public or voluntary outpatient clinics would be evaluated much lower.

Comments on the Study Design

We found that the use of birth certificates to obtain our sample has the following advantages:

- It permits identification of a total universe of persons who need to have certain kinds of care—prenatal, postnatal, and infant—available to them.
- It permits replication in any geographic setting.
- It provides information on the intended respondents that can be used to assess (*a*) the reliability of the data, by inclusion in the questionnaire of some of the same items that appear on the birth certificate, such as mother's education and place of birth, and (*b*) the representativeness of the study sample, by a comparison of the characteristics, such as race and age of the respondents and the nonrespondents, given on the birth certificates.

The choice of obstetric and pediatric (for newborns) care as the conditions for investigation has the following advantages:

- They require the use of health services, although the extent to which these services are used may vary.
- They permit views about various aspects (rather than

a specific, narrow aspect) of health care services. Health care can be examined on a continuum from curative medicine to health maintenance and from ambulatory to inpatient care for adults and infants, an approach that tests various aspects of health care by different sources.

• Health professionals and patients tend to agree on what constitutes appropriate regimens for obstetric and pediatric care.

• These two kinds of care are prevalent enough to assure a sample large enough to permit generalizations about the different sources of care.

Finally, this study followed a quasi-experimental (3) design for evaluation research, in which persons under observation are not assigned to groups; rather, persons are observed using the available alternative sources of care. This design is in contrast to valuable but small-scale studies in which experimental samples with con-

Table 1. Characteristics of respondents and nonrespondents

Characteristics	Total (N=1,322)		Respondents (N=817)		Nonrespondents (N=505)	
	Number	Percent	Number	Percent	Number	Percent
Race: ¹						
Black	1,048	79.3	630	77.1	418	82.8
White	274	20.7	187	22.9	87	17.2
Mother's age: ²						
17 and under	275	20.8	186	22.8	89	17.6
18-24	719	54.4	430	52.6	289	57.2
25-29	201	15.2	120	14.7	81	16.0
30 and over	127	9.6	81	9.9	46	9.1
Mother's education: ³						
To grade 8	115	8.8	74	9.1	41	8.2
Grades 9-11	566	43.1	349	42.9	217	43.4
Completed grade 12	448	34.1	280	34.4	168	33.6
13 or more grades	184	14.0	110	13.5	74	14.8
Father's education: ⁴						
Father not listed	658	50.0	408	50.0	250	49.9
To grade 8	60	4.6	41	5.0	19	3.8
Grades 9-11	206	15.6	127	15.6	79	15.8
Completed grade 12	241	18.3	151	18.5	90	18.0
13 or more grades	152	11.5	89	10.9	63	12.6
Number of prenatal visits: ⁵						
0-3	150	11.5	84	10.4	66	13.2
4-5	129	9.9	71	8.8	58	11.6
6-8	299	22.9	184	22.8	115	23.0
9 or more	730	55.8	469	58.0	261	52.2
Month of first prenatal visit: ⁶						
None	42	3.2	24	3.0	18	3.6
1-3	720	54.8	450	55.4	270	53.9
4-6	419	31.9	268	33.0	151	30.1
7-9	132	10.1	70	8.6	62	12.4
Parity: ⁷						
1	614	46.7	410	50.3	204	40.7
2-3	495	37.6	284	34.8	211	42.1
4 or more	207	15.7	121	14.8	86	17.2
Birth weight of baby (gm.): ⁸						
<2,500	150	11.3	93	11.4	57	11.3
2,500-3,000	321	24.3	190	23.3	131	25.9
3,001-3,500	514	38.9	314	38.4	200	39.6
3,501 or more	337	25.5	220	26.9	117	23.2
Hospital of confinement: ⁹						
Public	442	33.5	262	32.1	180	35.7
Voluntary	426	32.2	270	33.0	156	30.9
Meharry	454	34.3	285	34.9	169	33.5

¹ $\chi^2 = 6.087$; $P = .0131$. ² $\chi^2 = 5.766$; $P = .1221$.

³ $\chi^2 = .724$; $P = .8683$. ⁴ $\chi^2 = 1.841$; $P = .7677$.

⁵ $\chi^2 = 6.493$; $P = .0885$. ⁶ $\chi^2 = 5.666$; $P = .1275$.

⁷ $\chi^2 = 11.533$, $P = .0036$. ⁸ $\chi^2 = 2.769$; $P = .5594$.

⁹ $\chi^2 = 5.785$; $P = .3276$.

Note: Totals for education of mother, education of father, number of prenatal visits, and month of first prenatal visit are less than the totals for each sample because data were not available for some persons.

trols have been drawn from traditional outpatient clinic populations for participation in studies designed to measure the effects of care, including consumers' evaluations of alternative kinds of care (4-7). The chi-square procedure was used for analysis of the data presented here.

Findings

Representativeness of the study population. We were able to compare the respondents with the universe of women confined during 1973 because the base documents—the birth certificates from which we drew our sample—contained information on race, hospital where confined, age and education of mother, education of father, number of prenatal visits, birth weight, month of first prenatal visit, and parity. As shown in table 1, except for race and parity (proportionately more whites and women with one child were interviewed), there were remarkable similarities between the respondents and nonrespondents. Thus, our study findings are generalizable from the study population to the entire population of women confined during 1973 in a predominantly black and low-income area of Nashville.

Where the women sought care. The new health centers had been in existence for a relatively short time compared with the traditional sources of care; however, as shown in the following table, substantial use was made of each alternative source available in the community during 1973 for prenatal, postnatal, and infant care.

Sources of care	Prenatal (N=803)	Postnatal (N=729)	Infant (N=803)
Community center	127	103	104
Hospital center	82	70	112
Private physicians, Medicaid patients	72	59	54
Private physicians, paying patients	210	197	211
Outpatient clinic, public hospital	200	184	158
Outpatient clinic, voluntary hospital	112	116	164

Only 14 or 2 percent of the 817 respondents did not receive prenatal care, 88 or 10.8 percent did not receive postnatal care, and only 14 or 2 percent of the new babies did not receive care. Obviously, the first and most frequent provider-patient contacts during pregnancy occur in the prenatal period: therefore, most of our analyses in this paper are focused on sources of prenatal care—respondents who did not receive this care were excluded.

The sources of prenatal care were linked to the respondents' areas of residence and thus to the use of services available to them in their areas. The address shown on the birth certificate was used to make this determination for each respondent. Of the 326 mothers who lived in area 1 and who could have used the community health center, 111 or 34 percent received

their prenatal care there. This center was also the most frequently used source of prenatal care for respondents from its service area. Of the 304 mothers who lived in area 2 and who could have received prenatal care from the hospital center, 19 percent actually did so. The most frequently used source of care for area 2 was private physicians by paying patients. For area 3, the comparison area, the public hospital outpatient clinic and private physicians by paying patients were the primary sources of care for the 173 mothers who lived there. The community health center was used by 16 mothers who did not live in area 1, and the hospital-based center was used by 22 mothers who did not live in area 2. These women had lived in areas 1 or 2 during the prenatal period but subsequently moved; thus, they were listed on the birth certificates as living in other areas.

Characteristics of respondents. The social and demographic characteristics of the users of the six sources of prenatal care were as follows:

—Users of the community health center were most likely to be black, with more pregnancies, with lower family incomes, and without husbands. They were proportionately more likely to live in households headed by themselves or others, such as parents, grandparents, siblings, or friends.

—Users of the hospital-based health center were more likely to be black, older, with more pregnancies, with middle-level family incomes (but low by national or regional standards), without husbands, and to live in households headed by themselves or their mothers.

—Medicaid patients using private physicians were likely to be black, with more pregnancies, and to be the heads of their households.

—Paying patients of private physicians were proportionately more likely to be white, least likely to be young, far more likely to have adequate family incomes, and to have husbands.

—Users of the public hospital outpatient clinic were more likely to have low levels of formal education, more previous pregnancies, less income, least likely to have husbands, and more likely to live in households headed by their mothers.

—Users of the voluntary hospital outpatient clinic were proportionately more likely to be white, more likely to have middle-level incomes, and more likely to have husbands.

—Similar characteristics were seen for users of (a) the community health center and the public hospital outpatient clinic, (b) the hospital-based health center and private physicians by Medicaid patients, and (c) private physicians by paying patients and the voluntary hospital outpatient clinic.

An analysis of the preceding findings will be presented in a monograph.

Ratings of health care received. The women rated the sources of care by the grading system A to F—A meant best and F meant worst; E was omitted to prevent the possible grading of E as excellent. These ratings are shown in table 2.

Prenatal services were rated A by a majority only for care by private physicians and by the community health center. The public hospital outpatient clinic was the source most likely to be rated poorly. Postnatal care was given lower ratings than prenatal care. The lowest ratings for postnatal care were given to the hospital-based health center and the public hospital outpatient clinic. For infant care, the mothers rated all sources higher than they rated the sources of their own care.

Paying patients of private physicians were most likely to grant an A rating to their physicians, whereas

patients of the public hospital outpatient clinic were least likely to grant such a rating. At the other extreme, patients of the community health center were least likely to rate their physicians C, D, or F. Patients who used the public and voluntary outpatient clinics were far more likely to rate their physicians poorly.

Although there were no significant differences in the ratings given nurses according to the sources of care, the nurses were rated lower than the physicians. The receptionists in the public hospital clinic were rated C, D, or F by more than one-third of the respondents; these low ratings perhaps reflect the poor organization of services and understaffing in public outpatient clinics, factors that tend to bring out the worst in workers. The fact that the physicians received higher ratings than the nurses and the receptionists received the lowest ratings may be indicative

Table 2. Ratings of health care providers, by source of care

Ratings	Community health center, broad outreach		Hospital health center, limited outreach		Private physician, Medicaid patients		Private physician, paying patients		Public hospital outpatient clinic		Voluntary hospital outpatient clinics		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Prenatal care:¹														
A	73	57.9	40	48.8	43	60.6	145	69.0	73	36.7	54	48.6	428	53.6
B	43	34.1	32	39.0	17	23.9	44	21.0	63	31.7	41	36.9	240	30.0
C, D, F	10	7.9	10	12.2	11	15.5	21	10.0	63	31.7	16	14.4	131	16.4
Postnatal care:²														
A	53	52.0	24	34.3	34	57.6	118	60.5	79	42.9	58	50.4	366	50.5
B	32	31.4	26	37.1	14	23.7	56	28.7	60	32.6	32	27.8	220	30.3
C, D, F	17	16.7	20	28.6	11	18.6	21	10.8	45	24.5	25	21.7	139	19.2
Infant care:³														
A	69	67.0	75	68.8	34	68.0	155	75.2	92	61.7	102	66.2	527	68.4
B	30	29.1	27	24.8	12	24.0	38	18.4	37	24.8	36	23.4	180	23.3
C, D, F	4	3.9	7	6.4	4	8.0	13	6.3	20	13.4	16	10.4	64	8.3
Physician:⁴														
A	74	58.7	40	50.0	39	54.2	136	65.1	74	37.8	50	45.0	413	52.0
B	41	32.5	28	35.0	23	31.9	53	25.4	64	32.7	37	33.3	246	31.0
C, D, F	11	8.2	12	15.0	10	13.9	20	9.6	58	29.6	24	21.6	135	17.0
Nurse:⁵														
A	54	43.5	33	40.7	33	45.8	99	47.4	75	37.9	51	45.9	345	45.9
B	40	32.3	24	29.6	26	36.1	72	34.4	59	29.8	38	34.2	259	34.2
C, D, F	30	24.2	24	29.6	13	18.1	38	18.2	64	32.3	22	19.8	191	19.8
Receptionist:⁶														
A	57	47.1	38	46.9	27	41.5	97	50.0	66	35.7	43	44.3	328	44.1
B	36	29.8	23	28.4	27	41.5	56	28.9	50	27.0	34	35.1	226	30.4
C, D, F	28	23.1	20	24.7	11	16.9	41	21.1	69	37.3	20	20.6	189	25.4
Neighborhood health worker:⁷														
A	40	70.2	8	61.5									48	68.9
B	10	17.5	4	30.8									14	20.0
C, D, F	7	12.3	1	7.7									8	11.1
Drivers:⁸														
A	25	39.7	12	80.0									37	47.5
B	25	39.7	3	20.0									28	34.7
C, D, F	13	20.6	0	00.0									13	16.8

¹ $\chi^2 = 76.618$; $P = .0000$. ² $\chi^2 = 26.740$; $P = .0032$.
³ $\chi^2 = 15.744$; $P = .1069$. ⁴ $\chi^2 = 51.938$; $P = .0000$.
⁵ $\chi^2 = 15.420$; $P = .1172$. ⁶ $\chi^2 = 23.950$; $P = .0080$.
⁷ $\chi^2 = 1.236$; $P = .5441$. ⁸ $\chi^2 = 8.554$; $P = .0137$.

Note: Totals for the ratings of health care and health care providers are less than the totals reported for the use of the various sources of care for prenatal, postnatal, and infant care because data were not available for some persons.

of the relative importance ascribed to these health professionals.

Only the mothers who had used the new health centers, where such services were more likely to be available, were asked to rate the neighborhood health workers and the drivers who transported them to the

centers. Interestingly, the neighborhood health workers received more A ratings than any of the other workers at the centers, including the physicians.

To elaborate on the ratings, the mothers were asked if they considered their sources of care the best they could have used for their recent pregnancies. Affirma-

Table 3. Facilitators and barriers to obtaining health care, by source of prenatal care

Facilitators and barriers	Community health center, broad outreach		Hospital health center, limited outreach		Private physician, Medicaid patients		Private physician, paying patients		Public hospital outpatient clinic		Voluntary hospital outpatient clinics		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Transportation problems:¹														
Yes	8	6.3	12	14.6	13	18.1	19	9.0	32	16.0	13	11.6	97	12.1
No	119	93.7	70	85.4	59	81.9	191	91.0	168	84.0	99	88.4	706	87.9
Waiting time:²														
No long waits	53	47.7	30	36.6	32	45.1	108	52.2	25	12.8	33	29.5	281	35.4
Few long waits	61	48.0	39	47.6	31	43.7	68	32.9	90	46.2	47	42.0	336	42.3
Many long waits	13	10.2	13	15.9	8	11.3	31	15.0	80	41.0	32	28.6	177	22.3
Felt free to talk with physician:³														
Yes	97	76.4	49	59.8	54	75.0	168	80.0	126	63.0	71	63.4	565	70.4
No	30	23.6	33	40.2	18	25.0	42	20.0	74	37.0	41	36.6	238	29.6
Felt physician was interested in them:⁴														
Yes	92	72.4	52	63.4	43	59.7	167	79.5	91	45.5	62	55.4	507	63.1
No	35	27.6	30	36.6	29	40.3	43	20.5	109	54.5	50	44.6	296	36.9
Had personal problems:⁵														
Yes	49	38.6	31	37.8	23	31.9	82	39.0	90	45.0	43	38.4	318	39.6
No	78	61.4	51	62.2	49	68.1	128	61.0	110	55.0	69	61.6	485	60.4
Visited by a public health nurse during pregnancy:⁶														
Yes	95	74.8	28	34.1	32	44.4	19	9.0	119	59.5	30	26.8	323	40.2
No	32	25.2	54	65.9	40	55.6	191	91.0	81	40.5	82	73.2	480	59.8
Visited by a public health nurse after confinement:⁷														
Yes	95	74.8	35	42.7	34	47.2	35	16.7	136	68.0	38	33.9	373	46.5
No	32	25.2	47	57.3	38	52.8	175	83.3	64	32.0	74	66.1	430	53.5
Visited by a neighborhood health worker during pregnancy:⁸														
Yes	81	63.8	5	6.1	5	6.9	6	2.9	22	11.0	8	7.1	127	15.8
No	46	36.2	77	93.9	67	93.1	204	97.1	178	89.0	104	92.9	676	84.2
Visited by a neighborhood health worker after confinement:⁹														
Yes	77	60.6	1	1.2	6	8.3	4	1.9	18	9.0	7	6.2	113	14.1
No	50	39.4	81	98.8	66	91.7	206	98.1	182	91.0	105	93.8	690	85.9
Visited by a social worker during pregnancy or after confinement, or both:¹⁰														
Yes	47	37.0	13	15.9	14	19.4	6	2.9	34	17.0	12	10.7	126	15.7
No	80	63.0	69	84.1	58	80.6	204	97.1	166	83.0	100	89.3	677	84.3

¹ $\chi^2 = 11.656$; $P = .0393$. ² $\chi^2 = 106.946$; $P = .0000$.

³ $\chi^2 = 24.530$; $P = .0003$. ⁴ $\chi^2 = 58.960$; $P = .0000$.

⁵ $\chi^2 = 4.463$; $P = .5136$. ⁶ $\chi^2 = 189.158$; $P = .0000$.

⁷ $\chi^2 = 160.819$; $P = .0000$. ⁸ $\chi^2 = 265.806$; $P = .0000$.

⁹ $\chi^2 = 276.458$; $P = .0000$. ¹⁰ $\chi^2 = 72.894$; $P = .0000$.

Note: Totals for waiting time are less than the totals for each sample because data were not available for some persons.

tive responses were given by 53.3 percent of the paying patients of private physicians, 45.7 percent of the users of the community health center, 45.1 percent of the users of the hospital health center, 40.3 percent of the Medicaid patients of private physicians, 25.9 percent of the users of the voluntary hospital clinic, and 16 percent of the users of the public hospital clinic. However, when asked if they would continue to use the same sources, the affirmative responses were as follows:

<i>Sources of care</i>	<i>Percent affirmative</i>
Community health center	89.3
Private physicians, paying patients	85.4
Hospital-based health center	83.5
Voluntary hospital clinic	81.3
Private physicians, Medicaid patients	80.6
Public hospital clinic	67.4

Facilitators and barriers to care. As shown in table 3, 12.1 percent of the 803 mothers said they had difficulty in getting to their source of care. Users of the community health center with broad outreach had the least difficulty because it had a transportation system. Medicaid patients of private practitioners reported the most difficulty with transportation.

Only 10.2 percent of the women reported long waits in the community health center in contrast to 41 percent of those who used the public hospital clinic. The paying patients of private practitioners and the patients of the community health center felt more free to talk with their physicians than did the patients of the hospital-based center. More paying patients of private physicians and patients of the community health center believed that their physicians showed genuine interest in them than did the Medicaid patients of private physicians and the patients of the voluntary and public hospital clinics.

The outreach services were provided by public health nurses, neighborhood health workers, and social workers or social work assistants. A much higher percentage of the community health center patients were visited by a public health nurse before and after confinement than were the users of any of the other sources of care. The same situation held for visits by social workers or their assistants during the respondents' pregnancies. About 40 percent of all the respondents reported personal problems (financial, marital, job) both during and after pregnancy. This finding indicates that the outreach services available primarily to the community health center patients may have been needed just as much by users of other sources of care, including the paying patients of private physicians.

Continuity of care. Use of the same source for prenatal, postnatal, and infant care was greatest among paying patients of private physicians (79 percent of 210 women) and users of the new health centers (68 percent of 209 women). The Medicaid patients of private

physicians were most likely to shift to other sources for services needed in the postnatal period and for infant care; only 41.1 percent of 72 women in this group used private physicians for prenatal, postnatal, and infant care.

Aspects of provider behavior. The mothers reported few differences in the processes of care—the procedures and examinations carried out by the providers during office visits. However, they reported substantial differences in provider behavior in arranging for hospital admission, in delivering the baby, in giving advice, in making referrals to other providers, in visiting the mother at the hospital, and in determining the length of the mother's stay at the hospital.

As shown in table 4, prior arrangements for hospital admission were most likely made for patients of private practitioners and of the community health center and least likely for the patients of the public hospital clinic.

Private practitioners were more likely to deliver and make hospital visits to their paying patients than their Medicaid patients. Users of all other sources of care were far less likely to be delivered and visited by the same physicians who had seen them in the prenatal period. Users of the community health center were least likely to be delivered or visited by the same physicians because their coverage excluded inpatient services. This issue will be discussed in more detail in our forthcoming monograph.

Private practitioners and the community health center physicians were more likely to give the mothers advice concerning emergencies, labor, and danger signals than were the physicians of the other sources. Users of the community health center were far more likely to be referred for dental and nutritional services than were the users of the other sources of care. Among the other sources, only users of the hospital health center were likely to be referred for such services fairly often. The Medicaid patients of private physicians, who were covered for the costs of inpatient care, had longer hospital stays after delivery.

Aspects of users' behavior. A majority of users of all sources of care sought care in the first trimester. Private physicians' paying patients were most likely to seek care in the first trimester, and users of the public hospital clinic were more likely to seek care in the fourth month of pregnancy or later. The paying patients of private physicians also made the most prenatal visits and the public hospital clinic patients made the fewest.

The community health center patients were most likely to use the center for all of their personal medical needs. Paying patients were least likely to use their private physicians for other care, perhaps because they could afford to pay only for their prenatal and postnatal care; therefore, they sought care in the new health centers or the hospital clinics for their

other needs. As mentioned earlier, even the best off financially in this study had limited means by national and regional standards.

The users of the community health center were least likely to report postpartum anxiety, perhaps because of the center's outreach and other supportive services. The paying patients of private physicians were most likely to report postpartum anxiety and were also most likely to be primipara.

The paying and Medicaid patients of private physicians were least likely to attend prenatal educational classes. However, only about a fifth of the users of all other sources of care attended such classes.

About 95 percent of the users of the community health center and of the paying patients of private physicians reported having had a postnatal checkup; between 12 and 16 percent of the users of the four other sources reported that they did not have a postnatal checkup. Most of the respondents said that they had complied with the prescribed medical regimens.

Financial aspects. In this low-income community, the new Meharry health centers, Medicaid, and welfare provided varying amounts of coverage; total coverage was provided for 296. Although the median family income for the respondents was \$5,010, 507 women

Table 4. Aspects of provider behavior, by source of prenatal care

Providers' behavior	Community health center, broad outreach		Hospital health center, limited outreach		Private physician, Medicaid patients		Private physician, paying patients		Public hospital outpatient clinic		Voluntary hospital outpatient clinics		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Made prior arrangements for hospital admission: ¹														
Yes	97	76.4	56	68.3	62	86.1	166	79.4	87	43.9	69	61.6	537	67.1
No	30	23.6	26	31.7	10	13.9	43	20.6	111	56.1	43	38.4	263	32.9
Delivered the baby: ²														
Yes	2	1.6	5	6.1	48	66.7	159	76.1	17	76.1	18	8.6	249	16.1
No, but arranged for delivery	102	80.3	70	85.4	18	25.0	31	14.8	172	14.8	88	86.9	481	78.6
No	23	18.1	7	8.5	6	8.3	19	9.1	9	9.1	6	4.5	70	5.4
Made hospital rounds: ³														
Yes	19	15.0	34	41.5	60	83.3	179	85.2	84	42.0	64	57.1	440	54.8
No	108	85.0	48	58.5	12	16.7	31	14.8	116	58.0	48	42.9	363	45.2
Number days kept mother in hospital: ⁴														
1-3	73	57.5	44	53.7	26	36.1	112	53.6	141	71.2	82	73.2	478	59.7
4 or more	54	42.5	38	46.3	46	63.9	97	46.4	57	28.8	30	26.8	322	40.2
Gave advice about emergencies: ⁵														
Yes	93	73.2	55	67.1	52	72.2	182	86.7	140	70.0	87	77.7	609	75.8
No	34	26.8	27	32.9	20	27.8	28	13.3	60	30.0	25	22.3	194	24.2
Gave advice about danger signals: ⁶														
Yes	97	76.4	61	74.4	47	65.3	153	72.9	120	60.0	80	71.4	558	69.5
No	30	23.6	21	25.6	25	34.7	57	27.1	80	40.0	32	28.6	245	30.5
Gave advice about course of labor: ⁷														
Yes	89	70.1	53	64.6	42	58.3	149	71.0	114	57.0	82	73.2	529	65.9
No	38	29.9	29	35.4	30	41.7	61	29.0	86	43.0	30	26.8	274	34.1
Referred for dental services: ⁸														
Yes	64	50.4	30	36.6	10	13.9	59	28.1	32	16.0	17	15.2	212	26.4
No	63	49.6	52	63.4	62	86.1	151	71.9	168	84.0	95	84.8	591	73.6
Referred for nutritional services: ⁹														
Yes	106	83.5	66	80.5	43	59.7	164	78.1	136	68.0	83	74.1	598	74.5
No	21	16.5	16	19.5	29	40.3	46	21.9	64	32.0	29	25.9	205	25.5

¹ $\chi^2 = 80.849$; $P = .0000$. ² $\chi^2 = 409.018$; $P = .0000$.
³ $\chi^2 = 202.953$; $P = .0000$. ⁴ $\chi^2 = 40.825$; $P = .0000$.
⁵ $\chi^2 = 21.791$; $P = .0009$. ⁶ $\chi^2 = 14.190$; $P = .0145$.
⁷ $\chi^2 = 14.976$; $P = .0106$. ⁸ $\chi^2 = 66.507$; $P = .0000$.
⁹ $\chi^2 = 21.066$; $P = .0011$.

Note: Totals for made prior arrangements for hospital admission, delivered the baby, and number days kept mother in hospital are less than the totals for each sample because data were not available for some persons.

reported the following costs of their pregnancies:

Cost	Number of respondents
\$1,000 or more	74
\$700 to \$999	198
\$350 to \$699	115
\$1 to \$349	120

These bills, which had been paid out of pocket to varying extents, were superimposed on the limited levels of insurance coverage that these mothers had; of the 353 mothers with insurance coverage, only 35 were completely covered, 152 were partially covered, and 166 were not covered because they were not eligible (unmarried) or they obtained the policy after they became pregnant. Of the respondents who had to pay some or all of their medical bills (the median was \$434), 203 reported that they still owed on these bills. The median amount owed was \$290. These data are subject to more detailed analysis.

The majority, 62.6 percent of the respondents, believed that the costs of medical care were too high. As noted before, many were covered for the costs of care to varying extents. The community health center patients were fully protected, if eligible, against all ambulatory care costs, but not for inpatient care;

48 percent of its users thought the costs were too high. Of the paying patients of private physicians, 78.6 percent said the medical care costs were too high. About 75 percent of the 803 respondents favored an increase in income taxes so that all medical bills could be paid, and 95 percent favored national health insurance.

Birth and birth control. Five questions were asked to test the respondents' knowledge and awareness of the reproductive process and of birth control methods. These questions were taken from the Family Planning Study questionnaire prepared by Dr. Gerry E. Hendershot, Department of Sociology, Brown University, Providence, R.I. As shown in table 5, paying patients of private physicians correctly answered questions relating to the reproductive process more often than did all other respondents; this finding may reflect educational level. However, all the respondents had limited knowledge about the various birth control methods. This lack of knowledge points to a need for health education in this area.

Of the 803 respondents, 107 or 13.3 percent said that they had never practiced any form of birth control. Only 20 percent stated that they were using a contraceptive at the time of their recent conception. Approximately 80 percent of all the respondents had

Table 5. Knowledge of the reproductive process and birth control methods

Questions	Community health center, broad outreach		Hospital health center, limited outreach		Private physician, Medicaid patients		Private physician, paying patients		Public hospital outpatient clinic		Voluntary hospital outpatient clinics		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
How does conception occur? ¹														
Correct answer	24	18.9	14	17.1	21	29.2	113	53.8	48	24.0	39	34.8	259	32.3
Incorrect answer . . .	103	81.1	68	82.9	51	70.8	97	46.2	152	76.0	73	65.2	544	67.7
When are women most fertile? ²														
Correct answer	9	7.1	5	6.1	6	8.3	67	29.0	15	7.5	11	9.8	107	13.3
Incorrect answer . . .	118	92.9	77	93.9	66	91.7	149	71.0	185	92.5	101	90.2	696	86.7
How do birth control pills prevent pregnancy? ³														
Correct answer	8	6.3	4	4.9	4	5.6	35	16.8	14	7.0	10	8.9	75	9.3
Incorrect answer . . .	119	93.7	78	95.1	68	94.4	175	83.3	186	93.0	102	91.1	728	90.7
How does the IUD prevent pregnancy? ⁴														
Correct answer	2	1.6	0	0.0	0	0.0	14	6.7	2	1.0	3	2.7	21	2.6
Incorrect answer . . .	125	98.4	82	100.0	72	100.0	196	93.3	198	99.0	109	97.3	782	97.4
How does the diaphragm prevent pregnancy? ⁵														
Correct answer	8	6.3	8	9.8	5	6.9	24	11.4	14	7.0	13	11.6	72	9.0
Incorrect answer . . .	119	93.7	74	90.2	67	93.1	186	88.6	186	93.0	99	88.4	731	91.0

¹ $\chi^2 = 70.559$; $P = .0000$. ² $\chi^2 = 61.555$; $P = .0000$.

³ $\chi^2 = 19.161$; $P = .0022$. ⁴ χ^2 is not meaningful because the expected

frequency was sufficient in only 1 cell. ⁵ $\chi^2 = 4.994$; $P = .5826$.

Table 6. Aspects of birth control, by source of prenatal care

Aspects of birth control	Community health center, broad outreach		Hospital health center, limited outreach		Private physician, Medicaid patients		Private physician, paying patients		Public hospital outpatient clinic		Voluntary hospital outpatient clinics		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Mother's attitude toward birth control:¹														
Approve	109	85.8	60	73.2	58	80.6	185	88.1	167	83.5	90	80.3	669	83.3
Disapprove	18	14.2	22	26.8	14	19.4	25	11.9	33	16.5	22	19.7	134	16.7
Was the recent pregnancy planned?²														
Yes	21	16.5	14	17.1	6	8.3	76	36.2	28	14.0	24	21.4	169	21.0
No	106	83.5	68	82.9	66	91.7	134	63.8	172	86.0	88	78.6	634	79.0
Does mother desire more children?³														
Yes	73	57.5	40	48.8	43	59.7	88	41.9	99	49.5	52	46.5	395	49.2
No	54	42.5	42	51.2	29	40.3	122	58.1	101	50.5	60	53.6	408	50.8
Is mother now using birth control?⁴														
Yes	86	67.7	52	63.4	35	48.6	152	72.7	101	50.5	72	64.3	498	62.1
No	28	22.0	23	28.0	18	25.0	39	18.7	71	35.5	25	22.3	204	25.4
Had surgery	13	10.3	7	8.5	19	26.4	18	8.6	28	14.0	15	13.4	100	12.5

¹ $\chi^2 = 11.202; P = .0469$. ² $\chi^2 = 44.307; P = .0000$.
³ $\chi^2 = 11.502; P = .0418$. ⁴ $\chi^2 = 39.620; P = .0001$.

Note: The total for Is mother now using birth control? is less than the totals for each sample because data were not available for 1 person.

not planned their recent pregnancies. However, family planning was more evident among the paying patients of private physicians (table 6). Among all the respondents, 83.3 percent were in favor of birth control. The primary reasons cited by those who disapproved were "religious belief" and "harmful to health."

Regarding a desire for more children, 51 percent of the mothers said that they did not wish to have more (table 6). At the time of this interview, 31 respondents reported that they were pregnant again; 27 of these had not practiced birth control, and 24 of the 27 were users of the public hospital outpatient clinic.

Of 498 respondents who were practicing some form of birth control at the time of the interview, 77 percent were using the pill. One hundred respondents said that they had had a hysterectomy or a tubal ligation. As shown in table 7, those who had had surgery were far more likely to head their household, to have three or more children, to be 25 years or older, and to be Medicaid patients of private physicians than were the women who did not have surgery. Whether women who are Medicaid recipients and who desire surgery to prevent pregnancy are more likely to seek care from a private physician or whether private physicians are more likely to recommend surgery for their Medicaid patients is not known at present. Some further investigation is needed. If there is an incentive for physicians to advocate such surgery in return for fees, it would be a serious indictment of such a system of payment.

Reliability of Data

The data obtained in the interviews were compared with comparable items from the birth records. These data had been acquired at two different times. The first set of data (birth records) was obtained in the hospital after the delivery of the baby. The second set of data (questionnaires) was obtained by interviews with respondents at their homes some 6 months later. *K*, the kappa statistic ($\delta-10$), was used to measure the extent of agreement between these two sources of data. *K* is essentially the proportion of agreement after chance agreement is removed from consideration. The variables used to determine the extent of agreement and their respective kappas and standard errors of the kappas are as follows:

Variable	Number	K	Standard error (K)
Place of birth (hospital) --	817	.970	.0068
Mothers' education -----	813	.794	.0178
Number of living children --	813	.965	.0082

Clearly *K* is significant for all of the variables. In fact, it approaches unity for two of the three variables, thus indicating that a high degree of confidence can be placed in the extent of agreement between the two sources of data.

Discussion

The model that we developed for studying consumer evaluation of different kinds of health care sources permits (a) consumer evaluation of different

Table 7. A comparison of respondents having surgery (hysterectomy or tubal ligations) with those who did not

Category	Mothers with surgery		Mothers without surgery		Total	
	Number	Percent	Number	Percent	Number	Percent
Household head: ¹						
Self	40	40.0	125	17.8	165	20.6
Husband	47	47.0	262	37.3	309	38.5
Other	13	13.0	315	44.9	328	40.9
Source of prenatal care: ²						
Community center (outreach)	13	13.0	114	16.2	127	15.8
Hospital center	7	7.0	75	10.7	82	10.2
Private physician (Medicaid)	19	19.0	53	7.5	72	9.0
Private physician (paying)	18	18.0	191	27.2	209	26.1
Outpatient clinic, public hospital	28	28.0	172	24.5	200	24.9
Outpatient clinic, voluntary hospital	15	15.0	97	13.8	112	14.0
Number of living children: ³						
1 or 2	18	18.0	572	81.5	590	73.6
3	33	33.0	70	10.0	103	12.8
4 or more	49	49.0	60	8.5	109	13.6
Mother's age: ⁴						
Under 25	40	40.0	565	80.5	605	75.4
25-29	29	29.0	90	12.8	119	14.8
30 or more	31	31.0	47	6.7	78	9.7

¹ $\chi^2 = 44.825$; $P = .0000$. ² $\chi^2 = 17.890$; $P = .0035$.
³ $\chi^2 = 189.485$; $P = .0000$. ⁴ $\chi^2 = 87.625$; $P = .0000$.

Note: Data regarding whether or not surgery was performed were not available for 1 respondent.

health systems, (b) measures of reliability of the data, and (c) replication of the study in other settings. These three factors are considered to be highly relevant in consumer evaluation studies (11).

There has been a tendency to dismiss new models of care as unrealistic, as the social idealism of the late 1960s has seemed to fade. Nevertheless, the preliminary findings of our study suggest that one model in particular—a community-based health center that attempts to provide a broad range of outreach services—closely equals or surpasses the care provided by private physicians to paying patients. The Medicaid patients of private physicians evaluated their care as less satisfactory than did the paying patients of private physicians. Likewise, lower ratings were given to the other new model, a hospital-based health center with limited outreach and the outpatient clinics of other voluntary hospitals. The lower ratings for the new hospital-based health center may reflect the continuation of traditional outpatient clinic care in a new setting without provision for personalized professional services. The care provided by the public hospital outpatient clinic was evaluated at least satisfactory on many aspects of service.

The most important factor leading to the high rating of the community-based health center was that a substantial number of outreach services were actually received by the community served. The users of this health facility were visited by outreach workers during their pregnancies and after their deliveries, and they had a positive view of these outreach workers. Outreach care is sensitive to, and meets the needs of, the people; it should be given the opportunity to func-

tion and to be evaluated over a sufficient number of years. When the benefits of outreach care are considered in relation to costs, such care may prove as efficient in economic terms as it is sensitive in human terms.

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